Department of Toxic Substances Control

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APPROVAL OF SPECIAL WASTE APPLICATION FOR DEMOLITION WASTE FROM 573 WORLD WAR II-ERA WOODEN BUILDINGS AT FORMER FORT ORD, MONTEREY COUNTY

Dear Mr. Merry:

The Department of Toxic Substances Control (DTSC) acknowledges the receipt of supplementary information under cover of a letter dated August 26, 2003 from the Monterey Regional Waste Management District (MRWMD) in support of an application to classify waste from the demolition of 573 WWII era wooden buildings at former Fort Ord, California, as a special waste under sections 66261.122 and 66261.124, California Code of Regulations, title 22, division 4.5 (22 CCR). The supplemental information was provided in a report titled "Supplemental Waste Characterization Testing Final Report, Former Fort Ord, Marina, California" and dated August 21, 2003.

DTSC concludes that the information provided in this report, along with previously submitted information, is sufficient to approve for classification as special waste that waste defined as 573 WWII-era wooden military buildings with selected components removed (i.e., concrete, salvage, and hazardous materials other than lead based paint). This approval is based upon the fact that the waste meets the criteria and requirements in 66261.122, 22 CCR. Therefore, MRWMD may classify and manage this waste as a special waste pursuant to section 66261.126, 22 CCR.

Background

MRWMD submitted an initial application in behalf of the Fort Ord Reuse Authority (FORA), dated December 6, 2002, to classify a group of lead contaminated WWII-era wooden buildings as special waste. The following materials were submitted with the application:

- "Ford Ord Building Removal Debris Project Description," dated December 6, 2002, which included the following: (1) a letter from FORA in support of the application, (2) a Special Waste application, (3) a disposal variance request, and (4) a transportation variance request.

- "Report of Disposal Site Information for the Monterey Regional Waste Management District, Monterey Peninsula Landfill, Monterey County, California," dated January 1998.

DTSC determined in a letter dated January 31, 2003 that the application was incomplete and inadequate and recommended that MRWMD submit additional information, including a sampling plan, the purpose of which was to identify the buildings subject to the special waste determination, establish a sampling protocol, describe methods to be used for sample preparation and analysis, and describe the statistical approach that would be used to compare estimated mean lead concentrations to regulatory threshold levels. The additional information was subsequently provided in a report titled "Supplemental Waste Characterization Testing Final Report Former Fort Ord, Marina, California", dated June 5, 2003. This report was revised and resubmitted on August 21, 2003 and included the following additional information:

- Mass balance determinations on components of five types of WWII era wooden buildings scheduled for demolition and disposal at former Fort Ord
- A description of the waste characterization sampling methods
- Sample preparation and analytical methods
- Results of analyses of building components
- Statistical data analysis based upon stratified random sampling

Methodology

The overall approach to this special waste determination was based upon a stratified random sampling strategy. Five building types were considered as one level of stratification and building components were considered as another level of stratification (see enclosed Table 1). Stratified sampling was selected because it is believed to be the most efficient method for estimating overall mean lead concentrations in highly heterogeneous wastes such as buildings. DTSC determined that pre-demolition sampling was acceptable as long as the material subject to sampling was defined as the waste and would not be subsequently altered prior to disposal. In contrast, post-demolition sampling would have led to highly variable analytical results.

Masses for each building component by building type were obtained from an earlier study by FORA ("Basewide LBP Waste Characterization of WWII Era Wood Buildings at the Former Fort Ord," dated September 30, 2002). These masses were in turn based upon FORA's Building Component Quantity Estimate information which can be found in Appendix E of the report titled "Sampling Plan, 12th Street Realignment" dated October 27, 2001. Adjustments were made to account for variations in building characteristics (e.g., building dimensions and added partitions).

For each of the five building types, analyses for lead (i.e., TCLP, WET, and total) were made by Forensic Analytical for the three components believed to contribute the largest mass of lead for that building type. The selection of components for analysis was based upon an earlier analysis of building components for the 12th Street Realignment Project. Each selected component was randomly sampled at least three times using various hand and power tools as described in FORA's supplementary report. The means and standard deviations for each of these components for each building type (i.e., stratum) were then determined.

For components not sampled in the present study, lead concentrations from the 12th Street Realignment Project were used. Because samples were not replicated, sample variances could not be calculated. Instead, variances were approximated by regression analysis. In this approach standard deviations for each component in the present study were regressed on their respective sample means. A linear relationship was observed. From the resulting regression equation, an approximate standard deviation and, hence, variance was estimated for each lead value from the 12th Street Project. Because of the relatively low concentrations of lead in these latter components or the low mass fractions of these components, the uncertainty in these component (i.e., stratum) means and variances was not expected to affect the final conclusions.

Results and Conclusions

Results are summarized in the enclosed Table 2 for each building type and all building types combined. The highest mean TCLP lead value was for building type 5 (motor pool) at 4.78 ppm. The overall mean TCLP lead concentration for all 573 buildings was estimated to be 2.39 ppm with a 90% upper confidence limit (UCL) of 2.56 ppm, well below the federal regulatory level of 5 mg/Kg. The only building type to exceed the lead TTLC was the building type 5 (motor pool) at 1573 mg/Kg. The overall mean total lead concentration for all 573 buildings was 759 mg/Kg with a 90% UCL of 777 mg/Kg, below the TTLC for lead of 1000 mg/Kg. However, the mean concentration was above the statutory threshold value of 350 mg/Kg as given in Section 25157.8, California Health and Safety Code (CA-HSC). The mean WET lead concentrations exceeded the STLC

value for three of the five building types, with the highest being 108.92 mg/L. The overall mean WET lead concentration was 58 mg/L with a 90% UCL of 63 mg/L. These concentrations are above the lead STLC of 5 mg/L. When written in units of mg/Kg, the overall mean and UCL would be 580 mg/Kg and 630 mg/Kg, respectively. Both of these values are below the lead TTLC of 1000 mg/Kg.

Based upon information provided by the applicant, the waste is not a RCRA hazardous waste, does not meet any other California hazardous waste criteria (other than those discussed above), and meets the criteria and requirements for special waste under 66261.122, 22 CCR. Therefore, DTSC approves the request by MRWMD to classify and manage the 573 WWII-era wooden buildings (less concrete, salvage, and hazardous materials other than lead based paint) as a special waste.

This special waste classification approval applies only to the 573 WWII-era buildings as described in the application and not to any portion thereof. The approval only applies if these buildings are managed as one unit for disposal purposes. Any segregation of this waste stream into smaller management units will invalidate this approval. This special waste must be managed in accordance with section 66261.126, 22 CCR.

Services rendered by DTSC with regard to the application were funded under an agreement between MRWMD and DTSC (Contract No. 02-T2519).

Should you have any questions regarding this letter, please contact Mr. James Frampton at (916) 327-2522.

Sincerely,

Karl Palmer, Chief
Regulatory Program Development Branch
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Enclosures (2)

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Building Type	Description	Mass fraction	Components sampled	Number of samples
1A	Two story barracks (enlisted)	0.477	Exterior siding Window sashes Exterior trim	4 4 4
1B	Two story barracks (officers)	0.084	Exterior siding Window sashes Exterior trim	3 3 3
2	Clinic/Mess hall	0.148	Exterior siding Exterior trim Exterior doors	3 3 3
3	Day room	0.106	Exterior siding Window sashes Roof sheathing	3 3 3
5	Motor pool	0.184	Exterior siding Exterior doors Rafter tails	3 3 3

Table 2. Estimated means, variances and upper confidence limits (UCLs) for building types under deconstruction scenario 2 (concrete, salvage and non-LBP hazardous materials removed).

Building Type	Fractional Weight	DF	TOTAL				WET				TCLP			
			Mean	F*M	Var(str)	F^2*Var(str)	Mean	F x M	Var(str)	F^2*Var(str)	Mean	F*M	Variance	F^2*Var(str)
	(F)		(mg/kg)		$(mg/kg)^2$		(mg/l)		$(mg/l)^2$		(mg/l)		$(mg/l)^2$	
1A	0.477	9	570.36	272	2848.04	648.01	40.72	19.42	34.08	7.75	2.16	1.03	0.0677	0.0154
1B	0.084	6	742.48	62	13876.19	97.91	94.59	7.95	7160.93	50.53	1.08	0.09	0.1164	0.0008
2	0.148	6	322.08	48	15414.18	337.63	29.18	4.32	130.71	2.86	2.66	0.39	0.1930	0.0042
3	0.106	6	828.24	88	13647.55	153.34	55.49	5.88	102.77	1.15	0.00	0.00	0.1118	0.0013
5	0.184	6	1572.47	289	142752.02	4833.01	108.92	20.04	1019.10	34.50	4.78	0.88	2.1034	0.0712
	0.999	33		759		6070		57.61		96.80		2.39		0.0929
t(df=33;a/2 = 0.10)						1.306				1.306				1.306
90% UCL						**776.9362041**				**62.85605499**				**2.555782912**

Exceeds statutory or regulatory threshold